



QUICK START GUIDE



Cisco ASR 1004 Router

- 1 Documentation and Resources
- 2 Prepare for Installation
- 3 Rack-Mount the Router
- 4 Connect the Router to the Network
- 5 Start the System
- 6 Configure the Router
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1 Documentation and Resources

Documentation for the Cisco 1000 Series Aggregation Services Routers documentation is online with the exception of the regulatory compliance and safety documentation and the *Cisco 1000 Series Aggregation Services Routers* documentation flyer. For detailed hardware installation instructions, refer to the online *Cisco Series 1000 Aggregation Services Routers Hardware Installation and Initial Configuration Guide*. Refer to the following documentation for installation and replacement of parts (including shared port adapters) and regulatory compliance information.

- Shared port adapter documentation—See the *Cisco 1000 Series Aggregation Services Routers SIP and SPA Hardware Installation Guide*
- Hardware installation documentation—See the *Cisco 1000 Series Aggregation Services Routers Hardware Installation and Initial Configuration Guide*

Document Revision History

The Document Revision History table below records technical changes to this document.

Document Version	Date	Change Summary
OL-15412-03	November 2008	Improved the two-minute window allotted time to replace a power supply. You now have up to a maximum of five minutes to replace a power supply.
OL-15412-02	October 2008	Added Cisco ASR1000-ESP20 information.
OL-15412-01	April 2008	This is the first version of this document.

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2 Prepare for Installation

This section contains information about tools and parts, warnings, site preparation information, and information for rack-mount and equipment shelf or tabletop installation.



Warning Only trained and qualified personnel should install, replace, or service this equipment. Statement 1030

Before beginning this router installation, read the *Regulatory Compliance and Safety Information for the Cisco 1000 Series Aggregation Services Routers* document.

Site Preparation and Unpacking

- Lift the router safely out of the packing container.
- Ensure the power service at the site is suitable for the router you are installing.
- Check the packing slip to ensure that all the proper components are present.
- Locate and have accessible the Site Log for recording information about this installation.

Tools and Parts

Use the following list of tools and parts as a checklist for preparing to install the Cisco ASR 1000 Series Aggregation Services Router:

- ESD-preventative wrist strap
- AC power cord
- Appropriate cables to connect the router to the network and to the console terminal
- Tape measure and level
- Screwdrivers: Number 2 Phillips screwdriver and 3/16-inch flat-blade screwdriver
- Grounding lug and wires
- The rack-mount and cable-management kit:
 - Four 19-inch rack-mount (front and rear rails) and two cable-management brackets
 - Three sets of screws: one set for front rack-mount brackets, another set for rear rack-mount brackets, and a set for the cable management brackets (package with four screws).

Prepare for Equipment Shelf or Tabletop Installation

For a equipment shelf or tabletop installation, verify the following before installing the router:

- The router is off the floor and has adequate ventilation.
- An adequate chassis ground (earth) connection exists for the router.
- The router has at least 3 inches (7.62 cm) of clearance at the inlet and exhaust vents (sides of router).
- The router has 19 inches (48.3 cm) clearance at the front and rear to allow for field-replaceable unit replacement or installation, or to access cables or equipment.
- The shared port adapter filler panels are installed if a shared port adapter is not installed. The slots must not be empty.

Prepare for Rack-Mount Installation

Before you begin the rack-mounting tasks:

- Decide whether or not you want to front-mount or rear-mount the chassis
- Decide whether or not you want to attach cable-management brackets to your chassis.



Note If you install cable management brackets, make certain that you use the specified rack-mount ear holes as stated in the procedure.

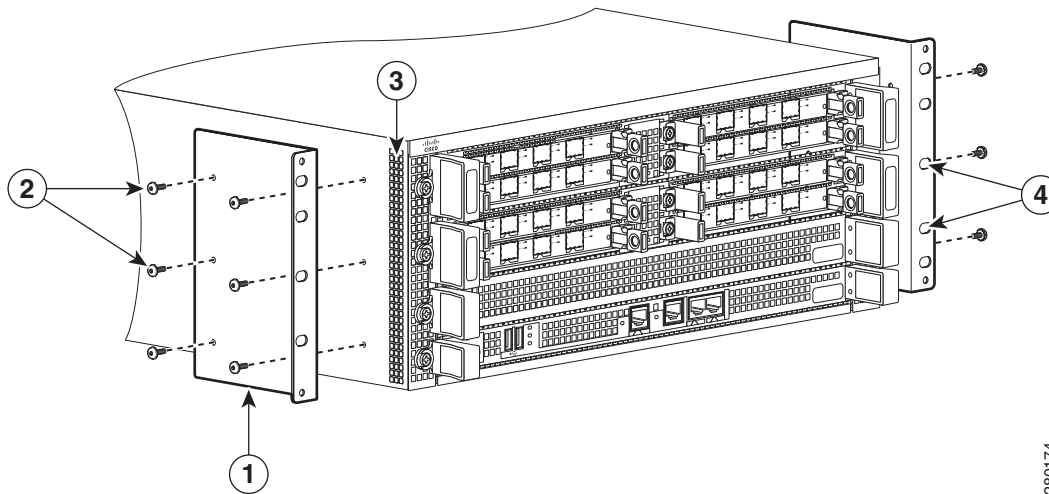
- Decide if a two-post or four-post rack-mount will be used

3 Rack-Mount the Router

This section provides information for rack-mounting the router.

Attach the Rack-Mount Brackets—Chassis Front-Mounted

Figure 1 Front Rack-Mount Brackets for the Cisco ASR 1004 Router



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1	Front rack-mount bracket	3	Chassis side vent holes
2	Front rack-mount bracket screws	4	Front rack-mount bracket and ear holes

To install the rack-mount brackets on a Cisco ASR 1004 Router for a front rack-mount configuration, follow these steps:

- Step 1** Locate the threaded holes in the front sides of the chassis.
- Step 2** Align the rack-mount bracket to the side of the router. Depending on which set of rack-mount bracket holes you choose to use to attach the rack-mount bracket to the router, the chassis will either be recessed in the rack or protrude from the rack.
- Step 3** Position the front rack-mount bracket top hole with the chassis first top hole behind the side vent holes as shown in [Figure 1](#).
- Step 4** Insert and tighten the screws on one side.
- Step 5** Repeat Step 1 through Step 4 on the other side of the chassis. Use the black screws to secure the rack-mount brackets to the chassis.

Step 6 To install the Cisco ASR 1004 Router in an equipment rack, see “[Four-Post Rack Installation](#)” section on page 6 or “[Two-Post Rack Installation](#)” section on page 8.



Note If you install cable management brackets, make certain that the chassis is mounted in the equipment rack first.

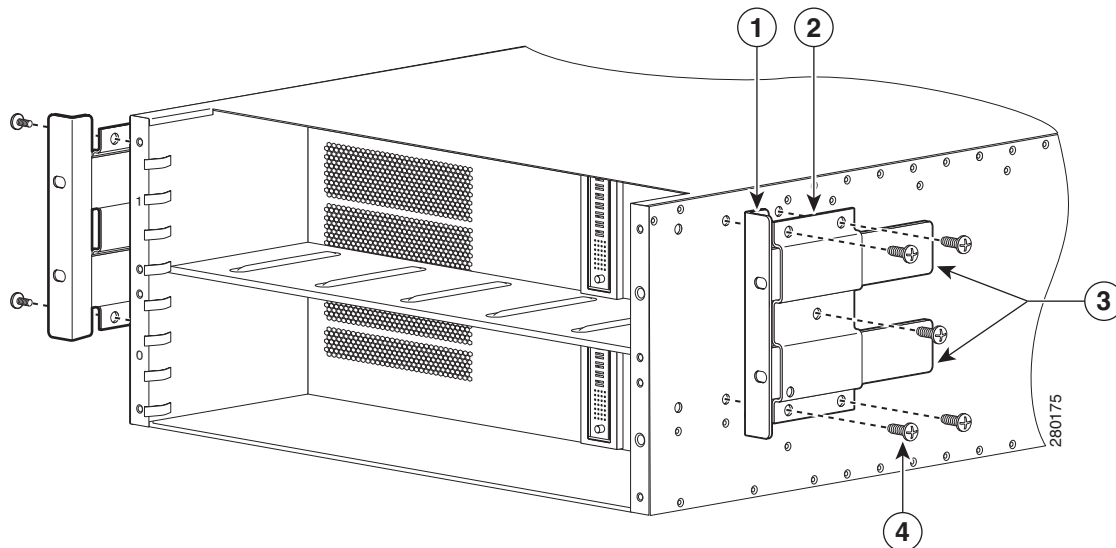
Attach the Rack-Mount Brackets—Chassis Rear-Mounted

To install the rack-mount on a Cisco ASR 1004 Router for a rear rack-mount configuration, follow these steps:

Step 1 Locate the threaded holes in the rear sides of the chassis. Make certain that you hold the rear rack-mount bracket with the ear facing outward and towards the rear of the chassis. Align the rack-mount bracket to the side of the router.

Step 2 Position the rear rack-mount bracket top hole with the chassis second top hole in from the back (See [Figure 2](#)).

Figure 2 Attaching the Rear Rack-Mount Brackets to Cisco ASR 1004 Router



1	Rear rack-mount bracket ear and holes	3	Rear rack-mount bracket components that slide into rear bracket which is attached to the chassis
2	Rear rack-mount bracket (first bracket to attach to chassis)	4	Rear rack-mount bracket screws

Step 3 Insert and tighten the screws. After the bracket is secured to the side of the chassis, slide the two remaining components into the side rack-mount bracket.

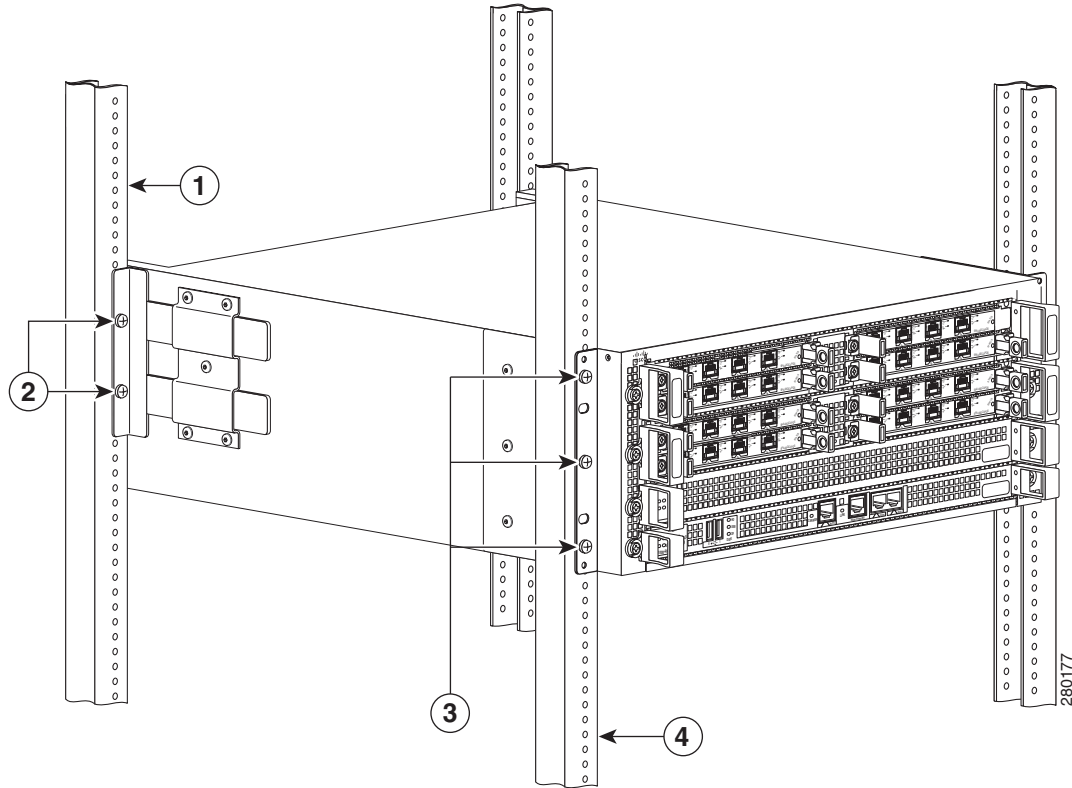
Step 4 Repeat Step 1 through Step 3 on the other side of the chassis. Use the screws on each side to secure the rear rack-mount brackets to the chassis.

This completes the procedure for attaching rear rack-mount brackets to the chassis. Continue on to installing the chassis in a rack.

Four-Post Rack Installation

This section describes the types of racks used for rack-mounting the chassis.

Figure 3 Installing the Cisco ASR 1004 Router in a Four-Post Rack



1	Equipment rack rear rail	3	Front rack-mount bracket and ear holes
2	Chassis rear rack-mount bracket and ear holes	4	Equipment rack front rail

Note Because the rack-mount brackets support the weight of the entire chassis, be sure to use all screws to fasten the two rack-mount brackets on the chassis to the rack posts.

Note We recommend that you allow at least 1 or 2 inches (2.54 or 5.08 cm) of vertical clearance between the router and any equipment directly above and below it.

To install the chassis in the rack, complete the following steps:

- Step 1** Make sure the rack brakes are locked or the rack is stabilized. Mount the chassis by securing the rack-mount brackets to two posts or mounting strips in the rack using the screws provided.
- Step 2** On the chassis, ensure that all screw fasteners on the installed components are securely tighten.
- Step 3** Make sure that your path to the rack is unobstructed. If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized. See the next sections on the types of racks you can use to install the chassis.
- Step 4** (Optional) Install a shelf in the rack to support the Cisco ASR 1004 Router.

Step 5 Lift the chassis into position between the rack posts (requires two people).

Step 6 Align the mounting bracket holes with the rack post holes and attach the chassis to the rack. At this point, if there is a third person, then that person can insert the screws while the other two people hold that chassis in place, unless the chassis is resting on a shelf.

Step 7 Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.



Note To allow space to attach the cable management brackets to the chassis in the rack easily, make certain that you use the rack-mount bracket ear holes specified in the next steps.

Step 8 Hold the chassis in position against the mounting rails and follow these steps:



Tip Insert the bottom screw first and then the second screw at the top of the chassis diagonally from the bottom screw. This helps secure the chassis in place while you insert the other screws.

- a. Insert the bottom screw into the third hole up from the bottom of the rack mount ear and use a hand-held screwdriver to tighten the screw to the rack rail.
- b. Insert the top screw into the third hole down from the top of the rack mount ear and tighten the screw to the rack rail.
- c. Insert a screw in the middle of the rack-mount bracket on both sides of the chassis.
- d. Repeat these steps for the other side of the chassis.



Note As a result of using the specified rack-mount bracket ear holes, the cable management bracket can be easily attached to the rack-mount bracket when the chassis is in the rack.

This completes the procedure for installing the chassis in the four-post rack. Proceed to the [“Attach the Cable-Management Bracket” section on page 9](#) to continue the installation.

Two-Post Rack Installation

The Cisco ASR 1004 Router can be installed in a two-post rack, either 19 inch or 23 inch.


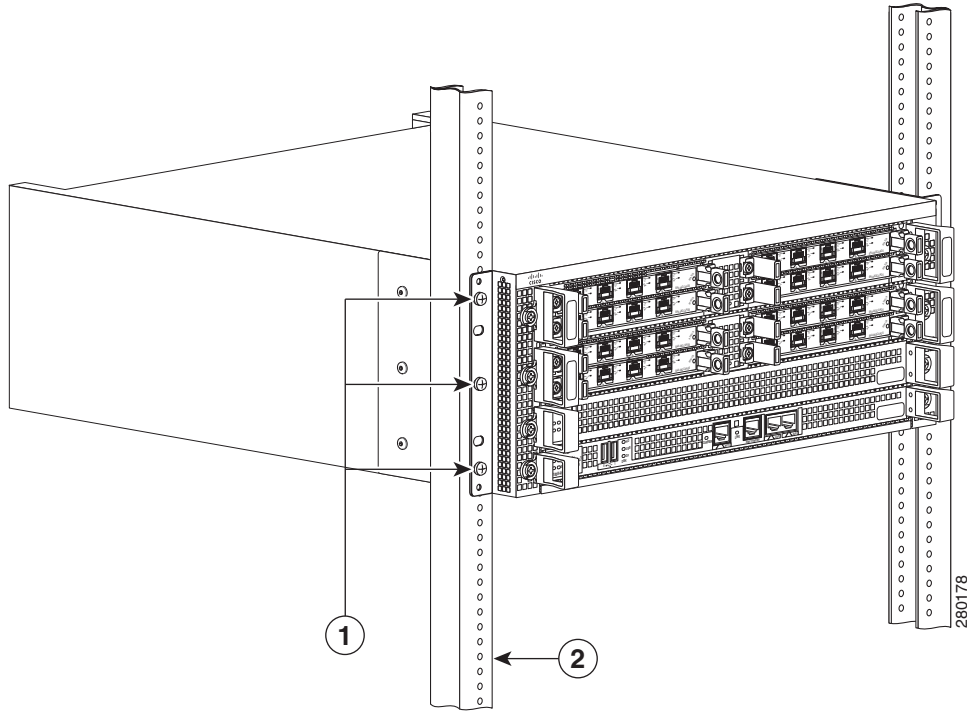

 **Note** Inner clearance (the width between the inner sides of the two posts or rails) must be at least 19 inches (48.26 cm). The height of the chassis is 1.73 inches (4.39 cm). Airflow through the chassis is from front to back.


Figure 4 Installing a Cisco ASR 1004 Router in a Two-Post Rack



1	Rack-mount bracket ear and holes	2	Rack equipment rail
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 **Caution** If you are using a two-post rack secure the rack to the floor surface to prevent tipping and avoid bodily injury and component damage.

- Step 1** Position the chassis so the front is closest to you and lift it carefully into the rack. To prevent injury, avoid any sudden twists or moves.
- Step 2** With at least two people, slide the chassis into the rack, pushing it back until the brackets meet the mounting strips or posts on both sides of the rack.
- Step 3** Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.

 **Note** To allow space to attach the cable management brackets to the chassis in the rack easily, make certain that you use the rack-mount bracket ear holes specified in the next steps.

Step 4 Hold the chassis in position against the mounting rails and follow these steps:

- a. Insert the bottom screw into the third hole up from the bottom of the rack mount ear and use a hand-held screwdriver to tighten the screw to the rack rail (see [Figure 4](#)).



Tip Insert the bottom screw first and then the second screw at the top of the chassis diagonally from the bottom screw. This helps secure the chassis in place while you insert the other screws.

- b. Insert the top screw into the third hole down from the top of the rack mount ear and tighten the screw to the rack rail.
- c. Insert a screw in the middle of the rack-mount bracket on both sides of the chassis.

Step 5 Repeat these steps for the other side of the chassis.



Note As a result of using the specified rack-mount bracket ear holes, the cable management bracket can be easily attached to the rack-mount bracket when the chassis is in the rack.

This completes the procedure for installing the chassis in a two-post rack. Proceed to the [“Attach the Cable-Management Bracket” section on page 9](#) to continue the installation.

Attach the Cable-Management Bracket

The cable management brackets mount to each rack-mount bracket on the chassis to provide cable management to both sides of the chassis (parallel with card orientation). These brackets are screw mounted to the rack-mount brackets to allow easy installation and removal of cables.

The cable management brackets for the Cisco ASR 1004 Router contain three independent cable management “U” type features with four screws and provides cable dressing of each card module slots. For the ASR 1000 Series SPA interface, these brackets work in tandem with shared port adapter product feature cable management device to allow installation and removal of adjacent cards without the need to remove cables.



Note Make certain that the cable management bracket “U” type feature is facing upwards when you attach it to the chassis.

Follow these steps to attach the cable-management brackets to both sides of the Cisco ASR 1004 Router in the rack:

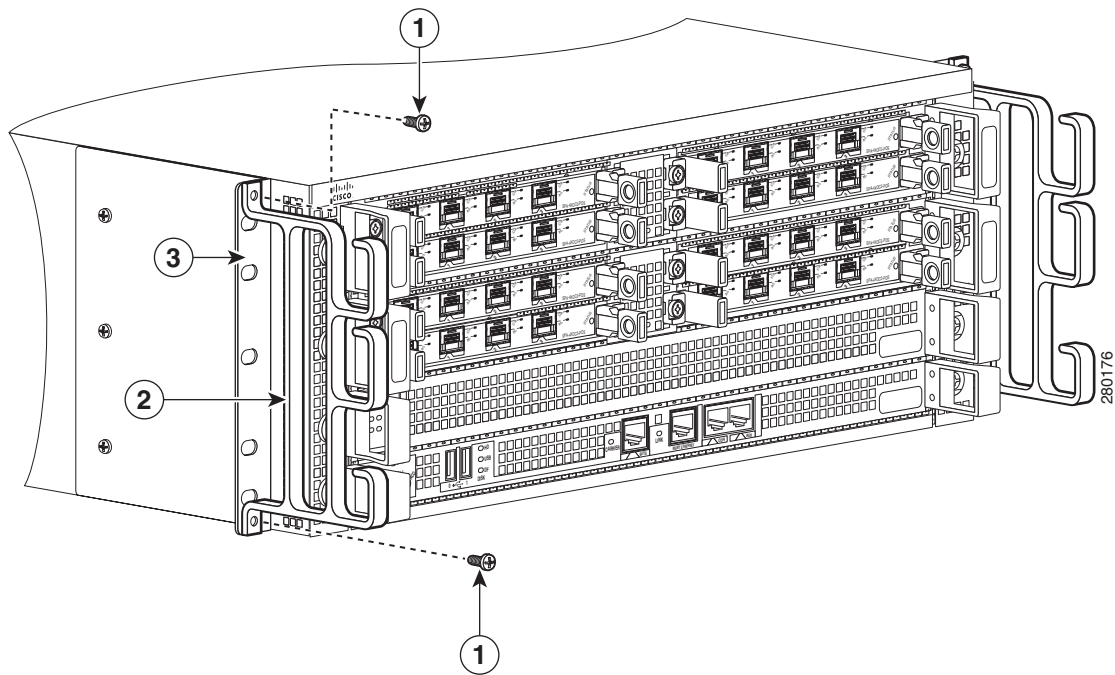
Step 1 Align the cable-management bracket to the rack-mount bracket on one side of the Cisco ASR 1004 Router. The cable management bracket aligns to the top hole of the chassis rack-mount bracket.

Step 2 Using a Phillips screwdriver, insert the screw through cable-management bracket and into the chassis rack-mount and tighten the screw.



Note Use the package of screws that came with your chassis containing four screws (two for each bracket).

Figure 5 Attaching the Cable-Management Bracket to the Cisco ASR 1004 Router



1	Cable-management bracket screws	3	Chassis front rack-mount bracket ear
2	Cable-management bracket		

- Step 3** Using the bottom rack-mount ear hole, insert the screw through cable-management bracket and into the chassis rack-mount (see [Figure 5](#)). [Figure 4](#) shows the cable-management brackets attached to the chassis in a rack.
- Step 4** Using a Phillips screwdriver and the cable management screw, thread and tighten the screw to the cable-management bracket
- Step 5** Repeat steps one through four for the other side of the Cisco ASR 1004 Router.

This completes the procedure for installing the cable-management bracket on a Cisco ASR 1004 Router for a front rack-mount configuration.

Chassis Ground Connection Installation

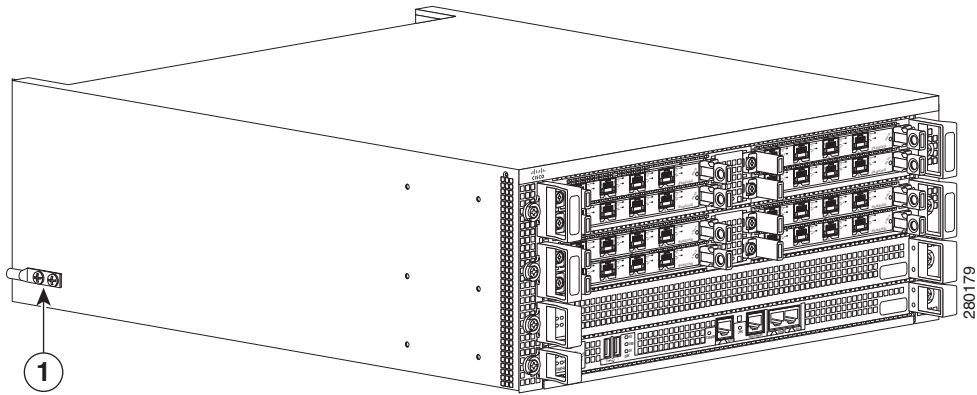
Before you connect power or turn on power to your router, you must provide an adequate chassis ground (earth) connection for the chassis ground connectors are provided on each Cisco ASR 1004 Router. The chassis ground connector is located on the side of the Cisco ASR 1004 Router.

The following tools, equipment, and supplies necessary to connect the system ground to the chassis:

- Phillips screwdriver
- Dual-lug chassis ground component
- Grounding wire

Figure 6 shows the location of the dual ground lug on the rear of the of Cisco ASR 1004 Router.

Figure 6 Chassis Ground Lug Location on the Cisco ASR 1004 Router

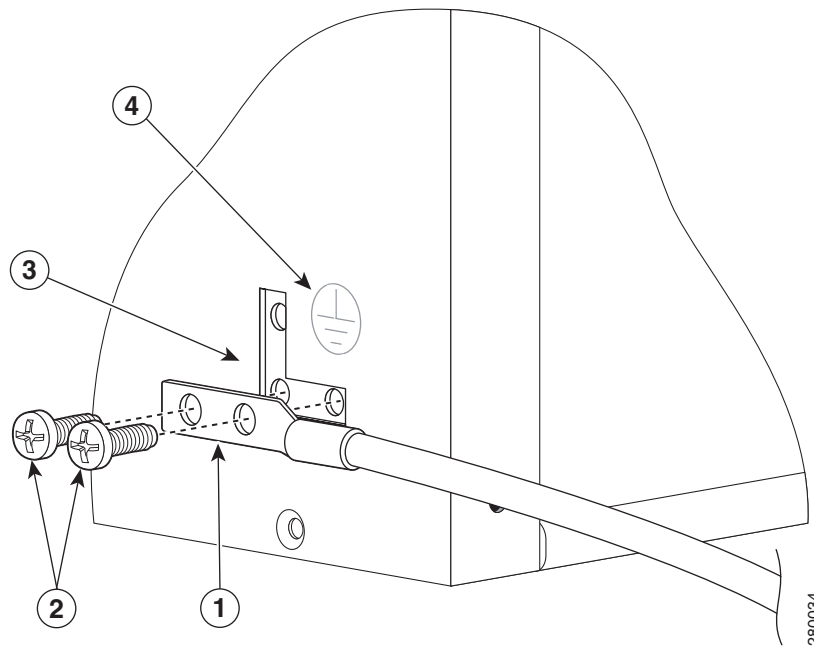


1	Chassis ground connector on the Cisco ASR 1004 Router
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Use the following procedure to attach the grounding lug to the chassis ground connector on your chassis:

- Step 1** Use the wire stripper to strip one end of the AWG #6 wire approximately 0.75 inches (19.05 mm).
- Step 2** Insert the AWG #6 wire into the wire receptacle on the grounding lug.
- Step 3** Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.
- Step 4** Attach the grounding lug with the wire on the left to avoid having the grounding wire overlapping the power supply. [Figure 7](#) shows how to attach the grounding screws.

Figure 7 Attaching a Grounding Lug to the Cisco ASR 1004 Router Chassis Ground Connector



1	Chassis earth ground studs and lead wire	3	Earth ground connector on the chassis
2	Grounding screws	4	Earth ground symbol

- Step 5** Locate the chassis ground connector on the side of your chassis.
- Step 6** Insert the two screws through the holes in the grounding lug.
- Step 7** Use the Number 2 Phillips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not overtighten the screws.
- Step 8** Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

This completes the procedure for attaching a chassis ground connection. Go to the [“Connect the Router to the Network”](#) section on page 12 for information on attaching cables.

4 Connect the Router to the Network

This section provides information about cables and ports and attaching the router to the network.

- [Console and Auxiliary Port Cable Connections, page 12](#)
- [Management Ethernet Port Cable Connection, page 13](#)
- [Connect the Shared Port Adapter Cables, page 14](#)
- [Install Cables in the Cable-Management Bracket, page 14](#)

Console and Auxiliary Port Cable Connections

This section describes how to attach a cable to the console or auxiliary ports on the Cisco ASR 1004 Router. The Cisco ASR1004 Router uses RJ-45 ports for both the auxiliary port and console port to attach a modem or console terminal.

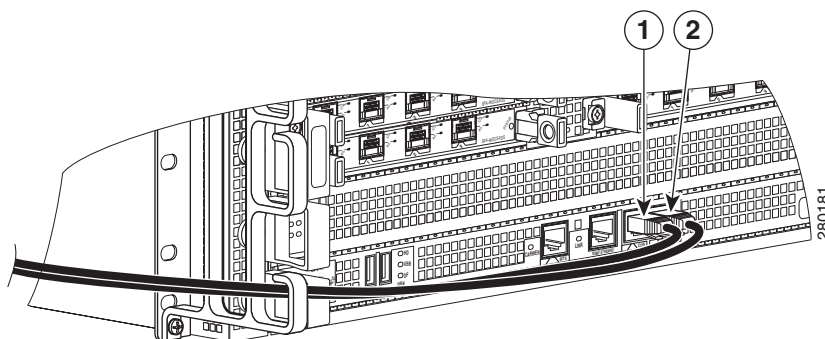
The console DCE-mode port connects a console terminal and a DTE-mode auxiliary port connects a modem or other DCE device to your router.



Note Both the console and the auxiliary ports are asynchronous serial ports; any devices connected to these ports must be capable of asynchronous transmission. (Asynchronous is the most common type of serial device; for example, most modems are asynchronous devices.)


- Step 1** Before connecting a terminal to the console port, configure the terminal to match the router console port as follows: 9600 baud, 8 data bits, no parity, 1 stop bits.

Figure 8 Cisco ASR1000-RP1 Console and Auxiliary Port Connectors



1	CON—console port	2	AUX —auxiliary port
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Step 2 After you establish normal router operation, you can disconnect the terminal.


 **Note** For console and auxiliary port pinouts, see Appendix A in the *Cisco ASR 1000 Series Aggregation Services Routers Hardware Installation and Initial Configuration Guide*.

Management Ethernet Port Cable Connection

Before you can use the console interface on the router using a terminal or PC, you must perform the following steps:

Step 1 Configure your terminal emulation software with the following settings:

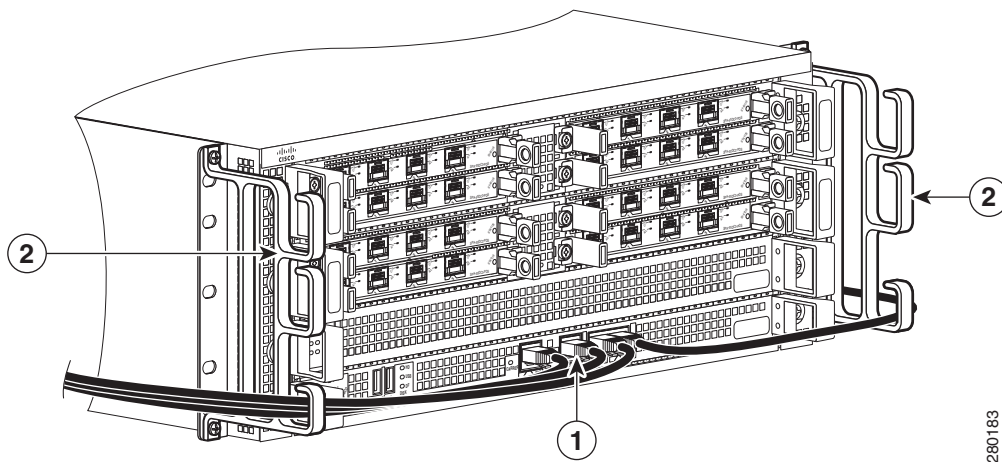
- 9600 bits per second (bps)
- 8 data bits
- No parity
- 1 stop bit
- No flow control

 **Note** For information about how to change the default settings to meet the requirements of your terminal or host, refer to the *Cisco IOS Terminal Services Configuration Guide*.

Step 2 Connect a terminal or PC to the console port using one of the following methods:

- To connect to the console port using the cable and adapters provided in the accessory kit that shipped with your Cisco ASR 1000 Series Router:
 - Place the console port mode switch in the in position (factory default).
 - Connect to the port using the RJ-45-to-RJ-45 cable and RJ-45-to-DB-25 DTE adapter or using the RJ-45-to-DB-9 DTE adapter.

Figure 9 Cisco ASR1000-RP1 ENET Management Port Connector



1	MGMT ETHERNET— Ethernet management port	2	Cable-management bracket and “U” feature device
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- Step 3** Insert an Ethernet RJ-45 cable into the MGMT ETHERNET port.
 - Step 4** Insert the other end of the RJ-45 cable to your management device or network.
 - Step 5** Configure to a fixed speed through the command line interface (CLI) commands.
-

Connect the Shared Port Adapter Cables

The instructions for connecting the cables for the shared port adapter installed in the Cisco ASR 1004 Router are contained in the *Cisco ASR 1000 Series Aggregation Services Routers SPA and SIP Hardware Installation Guide*.

Install Cables in the Cable-Management Bracket

No specific card level cable management will be provided on the SIP carrier cards. SPAs utilize the SPA cable management brackets that are provided with each SPA as part of their accessory kits. Cables coming off the front side of the SPAs and SIPs utilize the chassis level cable management brackets provided on the chassis rack mount brackets (see [Figure 9](#)).

To secure shared port adapter interface cables and input or output cables connected to the Cisco ASR 1004 Router, follow these steps:

- Step 1** When installing the network interface cables, route the cables up to and through the cable-management bracket ‘U’ device. If you are using very thin cables that slip through the bracket openings, insert nylon cable ties through the holes in the bracket and wrap them around the cables to secure them.
 - Step 2** Route the excess cable out through either end of the bracket, coil it, and secure it to the rack using nylon cable ties or some other mode of attachment.
 - Step 3** It might be necessary to bundle longer cables to avoid tangling them. Do this at the cable-management bracket or at the rack, but leave enough slack in the cables to remove processor modules and change cables as required. Also, do not block the power supply air vents with cables.
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This completes the procedure for installing the cables using the cable-management bracket.

Proceed to the [“Start the System”](#) section on [page 14](#) to complete the installation.

5 Start the System

Before you start the system, you must connect power to it.

Connect AC Power to the Router

This section provides information about installing an AC power supply in the Cisco ASR 1004 Router.

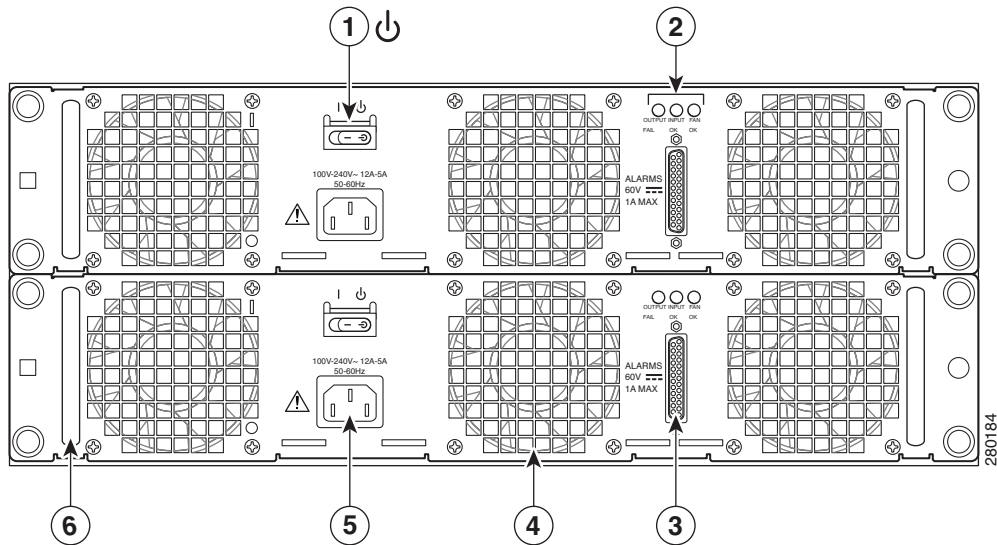
 **Warning** **Never install an AC power module and a DC power module in the same chassis.** Statement 1050.

 **Warning** **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

- Step 1** Insert an AC power supply in power supply Slot 0 or power supply Slot 1 until it is full seated.
- Step 2** Tighten the captive installation screws.

- Step 3** Insert the AC power cable into the power supply inlet.
- Step 4** Plug the power supply cable into the power source.
- Step 5** The power supply LEDs light when power is supplied to the router.

Figure 10 Cisco ASR 1004 Router AC Power Supply



1	AC power supply Standby switch	4	AC power supply fan
2	AC power supply LEDs	5	AC power inlet
3	DB-25 Alarm connector	6	AC power supply handle

- Step 6** Turn the power supply Standby switch to On (I) position.

This completes the procedure for connecting AC-input power.

Connect DC Power to the Router

This section provides instructions for installing the DC power supply into the Cisco ASR 1004 Router. Read the safety warnings and important notices before you begin.

Warning

Installation of the equipment must comply with local and national electrical codes. Statement 1074

Warning

Never install an AC power module and a DC power module in the same chassis. Statement 1050

Warning

When installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046



Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024



Warning

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028



Warning

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: AC power supplies 20 A and DC power supplies 40 A. Statement 1005

Before you begin, read these important notices:

- The color coding of the DC-input power supply leads depends on the color coding of the DC power source at your site. Typically, green or green/yellow is used for ground (GND), black is used for -48V on negative (-) terminal and red is used for RTN on the positive (+) terminal. Make certain the lead color coding you choose for the DC-input power supply matches lead color coding used at the DC power source.
- For DC input power cables, select the appropriate wire gauge based on the National Electrical Code (NEC) and local codes for 60-amp service at nominal DC input voltage (-48/-60 VDC). Three pairs of cable leads, source DC (-) and source DC return (+), are required for each power distribution unit (PDU). These cables are available from any commercial cable vendor. All input power cables for the chassis should have the same wire gauge and cable lengths should match within 10 percent of deviation.

Each DC input power cable is terminated at the PDU by a cable lug. The cable lugs must be dual-hole, and have a 45-degree angle tongue. They must be able to fit over #10 power terminal stud.



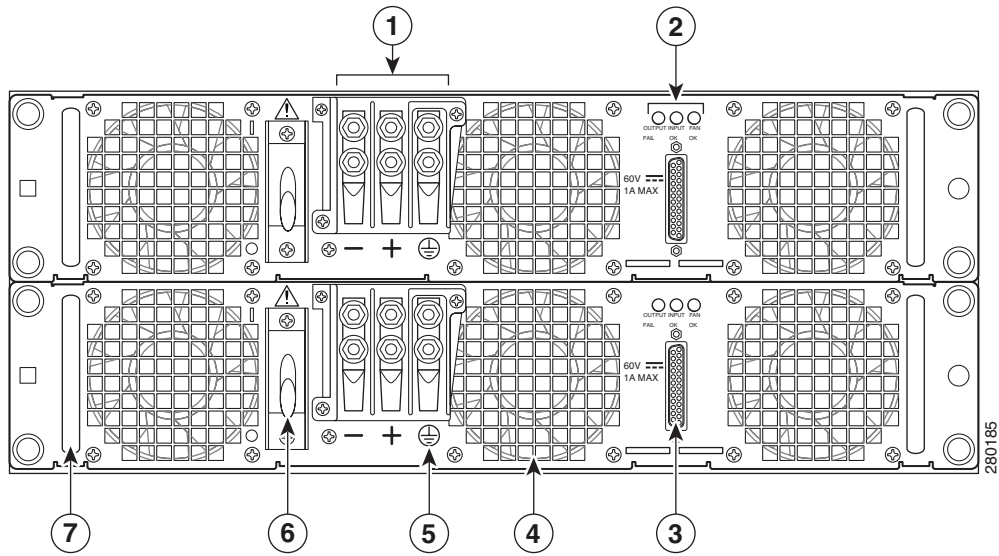
Note

DC input power cables must be connected to the PDU terminal studs in the proper positive (+) and negative (-) polarity. In some cases, the DC cable leads are labeled, which is a relatively safe indication of the polarity. However, you must verify the polarity by measuring the voltage between the DC cable leads. When making the measurement, the positive (+) lead and the negative (-) lead must always match the (+) and (-) labels on the PDU.

- An earth ground cable is required for each DC PDU. We recommend that you use at least 6-AWG multistrand copper wire. This wire is not available from Cisco Systems; it is available from any commercial cable vendor.

Figure 10 shows the DC power supply for the Cisco ASR 1004 Router.

DC Power Supply for the Cisco ASR 1004 Router



1	DC power supply terminal block and plastic cover	5	DC power supply earth ground symbol
2	DC power supply LEDs	6	DC power supply On (I)/ Off (O)
3	DB-25 alarm connector	7	DC power supply handle
4	DC power supply fan		

The Cisco ASR1004 has two of the same type power supplies in power supply Slot 0 and power supply Slot 1.

Caution Before you connect DC-input power, you must install the DC power ground leads to the DC power supply.

Caution To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions.

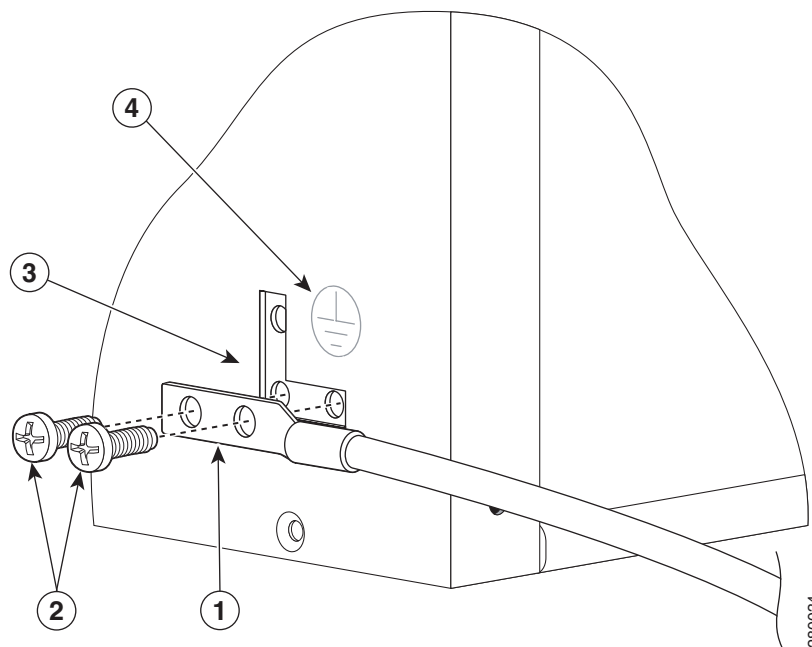
Obtain these necessary tools and equipment:

- Number 2 Phillips screwdriver
- A 3/16-inch flat-blade screwdriver

Installing the DC Ground Lugs

To install the grounding lugs on the DC power supply, follow these instructions. Figure 11 shows the location of the DC power supply grounding stud.

Figure 11 DC Power Supply Grounding Stud Location and Connection on the Cisco ASR 1004 Router



1	DC power supply grounding stud	3	DC power supply chassis grounding stud location
2	Grounding stud screws	4	Earth ground symbol

- Step 1** Make certain that the chassis ground is connected before you begin installing the DC power supply.
- Step 2** Locate the ground stud on the DC power supply for the **GND** connection which must be installed first and replace the ground stud components in the following order:
- b. Washer
 - c. Grounding lug with wire
 - d. Kepnut screw
- Step 3** Tighten the Kepnut screw to complete the installation. [Figure 11](#) shows the installed DC power supply ground stud.
- Step 4** Ground the other end of the grounding wires to an appropriate grounding point at your site.
- Step 5** Repeat Steps 2 through Step 4 on the second DC power supply.

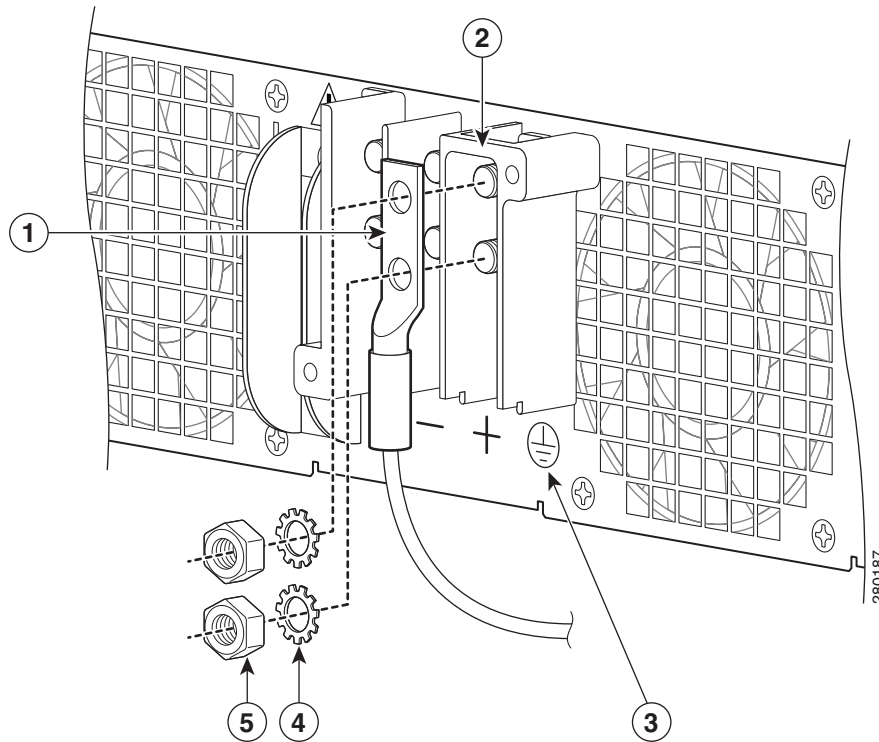
Wiring the DC-Input Power Source



Note The color coding of the DC-input power supply leads depends on the color coding of the DC power source at your site. Typically, green or green/yellow is used for ground (GND) on the power supply. Negative -48V black is on negative (-) terminal and red is used for RTN on the positive (+) terminal. Make certain the lead color coding you choose for the DC-input power supply matches lead color coding used at the DC power source.

- Step 1** Make sure the power switch circuit breaker is in the Off position.
- Step 2** Locate and remove the plastic cover from the terminal block.

Figure 12 Cisco ASR 1004 Router DC Power Supply Terminal Block



1	Ground lug and positive lead wire	4	Washer
2	Terminal block and positive stud	5	Kepnut screw
3	Earth grounding symbol		



Caution

Before you continue to install the terminal block wires, stop and perform Step 3 to prevent any contact with metal lead on the ground wire.

Step 3 You must wrap the positive and negative cables with sleeving. Take each ground wire and cover the area from the lug to the wire with heavy shrink sleeving.

Step 4 Insert the positive and negative cables. Replace the ground lug with cable in the following order:

- a. Ground lug with negative wire
- b. Washer
- c. Kepnut screw

Step 5 Tighten the Kepnut screw and repeat the same steps for the positive ground stud and wire.

Step 6 Replace the terminal block plastic cover and tighten the screw. The plastic cover is slotted and keyed to fit correctly over the terminal block.



Caution

Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact. There are hooks located on the base of the DC power supply to secure the ties to.

Step 7 Use tie wraps to secure the wires, so that the wires are not pulled from the terminal block by casual contact. The DC power supply has tie-wrap tabs to aid in securing the wires. Make sure the tie wrap allows for some slack in the ground wire.

Step 8 Connect the other ends of the terminal block cables to the site ground connection. Move the circuit-breaker switch to the On position (I).

This completes the procedure for connecting DC-input power. Your installation is complete. Proceed to the [“Start the System” section on page 14](#) to start the router.



Note After powering off the router, wait a minimum of 30 seconds before powering it on again.

Verifying Power Supply Operation

Follow this procedure to verify power supply is operating correctly.

Step 1 Check that the power supply LEDs are:

- INPUT OK is green
- FAN OK is green
- OUTPUT FAILED is not illuminated

Step 2 To ensure that the power supply state is OK, type the `show platform` command. This output sample is from a Cisco ASR1004 router.

```
MCP_SCAL_R1#sho plat
Chassis type: ASR1004
```

The following output displays:

Slot	Type	State	Insert Time
0	ASR1000-SIP10	ok	00:03:19
1	ASR1000-SIP10	ok	00:03:19
RP0	ASR1000-RP1	ok, active	00:03:19
FP0	ASR1000-ESP20	ok, active	00:03:19
P0	ASR1004-PWR-AC	ok	00:02:50
P1	ASR1004-PWR-AC	ps, fail	00:02:50

Slot	CPLD Version	Firmware Version
0	07091401	12.2(33r)XN2
1	07091401	12.2(33r)XN2
RP0	08060301	12.2(0:0)
FP0	08041102	12.2(33r)XN2

```
MCP_SCAL_R1#
```

If the LEDs indicate a power problem or the power supply state is ps,fail, then contact a customer service representatives for assistance or additional instructions.

Start the Cisco ASR 1004 Router

After installing your Cisco ASR 1004 Router and connecting cables, start the router as follows.

Step 1 Check for the following:

- Make certain that each shared port adapter is firmly seated in its subslot and its captive screws are securely tightened.
- The Cisco ASR1000-ESP10 forwarding processor in the Cisco ASR 1004 router is inserted in slot F0, is firmly seated in its slot, and its captive screws are securely tightened.
- All network interface cables are connected.
- The console terminal is turned on.

Step 2 Turn on power. The green OK LED on the power supply turns on.

Step 3 Listen for the fans; you should immediately hear them operating.

Step 4 During the boot process, observe the power LEDs. The power LED should be green on all boards. The Status LED lights yellow to indicate booting and then green when IOS is running.

Table 1 provides information about the LEDs as the system starts.

Table 1 Cisco ASR 1004 Router LED Activity

No.	LED Label	LED	Color	In the Power Up State -Behavior Description
1	PWR	Power	Solid green	All power requirements are within specification
			Off	Off, the router is in standby mode.
2	STAT	System status	Solid green	Cisco IOS has successfully booted.
			Yellow	BOOT ROM has successfully loaded.
			Red	System failure.
3	ACTV	Active	Green	Lit when this is the active ASR 1000 Series RP1.
4	STBY	Standby	Yellow	Lit when this is the standby ASR 1000 Series RP1.
5	CRIT	Critical	Solid Red	Critical alarm indicator. This is on at power up, turned off by software.
6	MAJ	Major	Solid Red	Major alarm indicator.
7	MIN	Minor	Amber	Minor alarm indicator.
8	ACO	One Alarm cutoff switch.	Button	When you press this button an interrupt is generated informing software that the audible alarm relays will be disabled. This interrupt generates to both processors.
9	DISK HD	Internal Hard Drive LED	Flashing Green	Activity indicator.
			Off	No activity.
10	DISK USB	External Compact FLASH LED	Flashing Green	Activity indicator.
			Off	No activity.
11	DISK BF	Internal Compact FLASH (BootDisk) LED	Flashing Green	Activity indicator.
			Off	No activity.



Note The system boots differently depending on the configuration that ships with your system. Example one in this section shows the system being booted from ROMMON with an image all ready resident as the first image in bootflash. The display below is a snapshot of messages that are output on the console of the Cisco ASR 1004 Router system after power-up and during IOS booting.

Step 5 Observe the initialization process. When the system boot is complete (a few seconds), the Cisco ASR 1000 Series RP1 begins to initialize. The console screen displays a script and system banner similar to the following:

```
rommon 1 >
rommon 1 > boot
```

Located rp_super.ppc.nader.5g.evfc.bin
Image size 211681484 inode num 12, bks cnt 51681 blk size 8*512

#####

Boot image size = 211681484 (0xc9e00cc) bytes

Using midplane macaddr
Package header rev 0 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
 calculated 479a7d62:6c128ba8:3616b8da:93cb3224:5c1aeb34
 expected 479a7d62:6c128ba8:3616b8da:93cb3224:5c1aeb34
Image validated

PPC/IOS XE loader version: 0.0.3
loaded at: 00800000 0D1E2004
zimage at: 00807673 009B8C69
initrd at: 009B9000 01006219
isord at: 01007000 0D1DF800
avail ram: 00400000 00800000

Kernel load:
Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B15F6...done.
Now booting the IOS XE kernel

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Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVIPSERVICESK9-M), Experimental Version 12.2(20071221:020608) [BLD-mcp_dev.MCP_INCREMENTAL_BLD_20071220 102]
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Thu 20-Dec-07 18:10 by mcpre
Image text-base: 0x10062890, data-base: 0x132A7900

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cisco ASR1004 (RP1) processor with 541737K/6147K bytes of memory.
4 Gigabit Ethernet interfaces

32768K bytes of non-volatile configuration memory.
1869396K bytes of physical memory.
7798783K bytes of eUSB flash at bootflash:.

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

```
*Feb 19 17:34:27.361: % Error opening nvram:/ifIndex-table No such file or directory
*Feb 19 17:34:28.235: %ASR1000_MGMTVRF-6-CREATE_SUCCESS_INFO: Management vrf Mgmt-intf created with ID
4085, ipv4 table-id 0xFF5, ipv6 table-id 0x1E00001
*Feb 19 17:34:29.720: %PARSER-4-BADCFG: Unexpected end of configuration file.

*Feb 19 17:34:29.809: %NETCLK-5-NETCLK_MODE_CHANGE: Network clock source not available. The network clock
has changed to freerun

*Feb 19 17:34:10.138: %CPPHA-7-SYSREADY: F0: cpp_ha: CPP client process FMAN-FP (5 of 5) ready.
*Feb 19 17:34:29.824: %LINK-3-UPDOWN: Interface GigabitEthernet0, changed state to up
*Feb 19 17:34:10.269: %IOSXE-6-PLATFORM: F0: cpp_cp: cpp_mlp_svr_client_bind: cpp_mlp_svr_ifm_init()
successful
*Feb 19 17:34:10.362: %CPPHA-7-START: F0: cpp_ha: CPP 0 preparing image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:10.473: %CPPHA-7-START: F0: cpp_ha: CPP 0 startup init image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:14.688: %CPPHA-7-START: F0: cpp_ha: CPP 0 running init image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:14.919: %CPPHA-7-READY: F0: cpp_ha: CPP 0 loading and initialization complete
*Feb 19 17:34:14.919: %CPPHA-6-SYSINIT: F0: cpp_ha: CPP HA system configuration start.
*Feb 19 17:34:15.179: %IOSXE-6-PLATFORM: F0: cpp_cp: Process CPP_PFILTER_EA_EVENT_API_CALL_REGISTER
*Feb 19 17:34:15.286: %CPPHA-6-SYSINIT: F0: cpp_ha: CPP HA system enabled.
*Feb 19 17:34:15.287: %CPPHA-6-SYSINIT: F0: cpp_ha: CPP HA system initializaton complete.
*Feb 19 17:34:30.823: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0, changed state to
down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to administratively
down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to administratively
down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/2, changed state to administratively
down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/3, changed state to administratively
down
*Feb 19 17:35:13.865: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state
to down
*Feb 19 17:35:13.865: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1, changed state
to down
*Feb 19 17:35:13.866: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/2, changed state
to down
*Feb 19 17:35:13.866: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/3, changed state
to down
*Feb 19 17:35:19.167: %ASR1000_OIR-4-REMSPA: SPA removed from subslot 0/0, interfaces disabled
*Feb 19 17:35:19.171: %ASR1000_OIR-4-INSCARD: Card (fp) inserted in slot F0
*Feb 19 17:35:19.171: %ASR1000_OIR-4-ONLINECARD: Card (fp) online in slot F0
*Feb 19 17:35:19.187: %ASR1000_OIR-4-INSCARD: Card (cc) inserted in slot 0
*Feb 19 17:35:19.187: %ASR1000_OIR-4-ONLINECARD: Card (cc) online in slot 0
*Feb 19 17:35:19.189: %ASR1000_OIR-4-INSSPA: SPA inserted in subslot 0/0
*Feb 19 17:35:19.452: %SYS-5-RESTART: System restarted --
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVIPSERVICESK9-M), Experimental Version
12.2(20071221:020608) [BLD-mcp_dev.MCP_INCREMENTAL_BLD_20071220 102]
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Compiled Thu 20-Dec-07 18:10 by mcpre
*Feb 19 17:35:19.455: %SYS-6-BOOTTIME: Time taken to reboot after reload = 78809 seconds
*Feb 19 17:35:19.551: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 19 17:35:19.551: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 19 17:35:21.669: %DYNCMD-7-CMDSET_LOADED: The Dynamic Command set has been loaded from the Shell
Manager
```

Step 6 Router>

6 Configure the Router

Use this section for information on configuring the Cisco ASR 1004 Router.

Using the Console Interface

To access the command line interface using the console, follow these steps:

Step 1 Once the terminal console port is connected, configure your terminal emulation software with valid settings. Start at the following prompt:

Press Return for Console prompt

Step 2 Press **Return** to enter user EXEC configuration mode. The following prompt appears:

Router>

Step 3 From user EXEC configuration mode, enter the enable command as shown in the following example:

Router> enable

Step 4 At the password prompt, enter your system's password. If an enable password has not been set on your system, this step may be skipped. The following example shows entry of the password called *enablepass*:

Password: enablepass

Step 5 When your enable password is accepted, the privileged EXEC configuration mode prompt appears:

Router#

Step 6 You now have access to the CLI in privileged EXEC configuration mode and you can enter the necessary commands to complete your desired tasks.

Step 7 To exit the console session, enter the quit command as shown in the following example:

Router# quit

Configure Global Parameters Using the Setup Facility

When you first start the setup program, you must configure the global parameters. These parameters are used for controlling system-wide settings. Complete the following steps to enter the global parameters:

Step 1 Connect a console terminal to the console port and then boot the router. The system boots from flash memory. The following information appears after about 30 seconds.



Note This is only an example of the output display; prompts may vary.

Step 2 The first sections of the configuration script appear only at an initial system startup. On subsequent uses of the setup facility, the script begins with a System Configuration Dialog as shown below: When asked if you would like to enter the initial configuration dialog, enter yes.

```
Would you like to enter the initial configuration dialog? [yes/no] yes
```

```
At any point you may enter a question mark '?' for help.  
Use ctrl-c to abort configuration dialog at any prompt.  
Default settings are in square brackets '[]'.
```


Basic management setup configures only enough connectivity for management of the system, extended setup will ask you to configure each interface on the system.

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: y

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity for management of the system, extended setup will ask you to configure each interface on the system

Would you like to enter basic management setup? [yes/no]: n

First, would you like to see the current interface summary? [yes]: y

Any interface listed with OK? value "NO" does not have a valid configuration

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0/0	unassigned	NO	unset	down	down
GigabitEthernet0/0/1	unassigned	NO	unset	down	down
GigabitEthernet0/0/2	unassigned	NO	unset	down	down
GigabitEthernet0/0/3	unassigned	NO	unset	down	down
GigabitEthernet0	unassigned	YES	unset	administratively down	down

Configuring global parameters:

Enter host name [Router]:

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.

Enter enable secret: test

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.

Enter enable password: tests

The virtual terminal password is used to protect access to the router over a network interface.

Enter virtual terminal password: test

Configure SNMP Network Management? [yes]: n

Configure IP? [yes]: y

Configure RIP routing? [no]:

Configure bridging? [no]:

Configure CLNS? [no]:

Configuring interface parameters:

Do you want to configure GigabitEthernet0/0/0 interface? [yes]: n

Do you want to configure GigabitEthernet0/0/1 interface? [yes]: n

Do you want to configure GigabitEthernet0/0/2 interface? [yes]: n

Do you want to configure GigabitEthernet0/0/3 interface? [yes]: n

Do you want to configure GigabitEthernet0 interface? [no]: n

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$6r./$U5wHcV3uRWkKWK/fap474.
```

```

enable password tests
line vty 0 4
password test
no snmp-server
!
ip routing
no bridge 1
no clns routing
!
interface GigabitEthernet0/0/0
shutdown
no ip address
!

interface GigabitEthernet0/0/1
shutdown
no ip address
!
interface GigabitEthernet0/0/2
shutdown
no ip address
!
interface GigabitEthernet0/0/3
shutdown
no ip address
!
interface GigabitEthernet0/1/0
shutdown
no ip address
!
interface GigabitEthernet0/1/1
shutdown
no ip address
!
interface FastEthernet0/3/0
shutdown
no ip address
!
interface FastEthernet0/3/1
shutdown
no ip address
!
interface FastEthernet0/3/2
shutdown
no ip address
!
interface FastEthernet0/3/3
shutdown
no ip address
!
interface FastEthernet0/3/4
shutdown
no ip address
!
interface FastEthernet0/3/5
shutdown
no ip address
!
interface FastEthernet0/3/6
shutdown
no ip address
!
interface FastEthernet0/3/7
shutdown
no ip address
!
interface GigabitEthernet0

```

```
shutdown
no ip address
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
end
```

[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

Enter your selection [2]:

```
Router#reload
Proceed with reload? [confirm]
```

*Jan 11 06:59:29.476: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload command.

```
System Bootstrap, Version 12.2(20071105:235056) [gschnorr-mcp_rommon_rel_1_25 101], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2007 by cisco Systems, Inc.
Compiled Mon 05-Nov-07 16:50 by gschnorr-mcp_rommon_rel_1_25
```

```
Current image running: Boot ROM1
Last reset cause: LocalSoft
SATA drive PCI config error
```

ASR1004-RP1 platform with 2097152 Kbytes of main memory

```
rommon 1 > b tftp:images/packages_crypto/asr1000rp1-advipservicesk9.mcp_dev_20080109_101550.bin
```

```
      IP_ADDRESS: 2.1.6.5
      IP_SUBNET_MASK: 255.255.0.0
      DEFAULT_GATEWAY: 2.1.0.1
      TFTP_SERVER: 2.0.0.2
      TFTP_FILE: images/packages_crypto/asr1000rp1-advipservicesk9.mcp_dev_20080109_101550.bin
```

Using midplane macaddr

```
      TFTP_MACADDR: 00:14:a8:ff:42:ff
      TFTP_VERBOSE: Progress
      TFTP_RETRY_COUNT: 18
      TFTP_TIMEOUT: 7200
      TFTP_CHECKSUM: Yes
      ETHER_PORT: 3
```

ETHER_SPEED_MODE: Auto Detect

link up 1000Mbps/FD.....

Receiving images/packages_crypto/asr1000rp1-advipservicesk9.mcp_dev_20080109_101550.bin from 2.0.0.2

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

File reception completed.

Boot image size = 206741708 (0xc52a0cc) bytes

Using midplane macaddr

Package header rev 0 structure detected

Calculating SHA-1 hash...done

validate_package: SHA-1 hash:

```
      calculated a8301e1e:17821e94:07654c49:4ca6fe49:518af2c2
      expected  a8301e1e:17821e94:07654c49:4ca6fe49:518af2c2
```

Image validated

PPC/IOS XE loader version: 0.0.3

loaded at: 00800000 OCD2C004

zimage at: 00807673 009B8E53
initrd at: 009B9000 01006E53
isord at: 01007000 0CD2A000
avail ram: 00400000 00800000

Kernel load:

Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B17E0...done.
Now booting the IOS XE kernel

%IOSXEBOOT-4-BOOT_PARAMETER: (rp/0): Booting with custom BOOT_PARAM setting
%IOSXEBOOT-4-DEBUG_CONF: (rp/0): File /misc/scratch/debug.conf is absent, ignoring

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cisco ASR1004 (RP1) processor with 548011K/6147K bytes of memory.
8 FastEthernet interfaces
6 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
2097152K bytes of physical memory.
947711K bytes of eUSB flash at bootflash:.
253407K bytes of USB flash at usb0:.

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: n



Note Basic management setup configures enough connectivity for managing the system; extended setup will ask you to configure each interface on the system. For detailed information about setting global parameters, refer to the *Cisco ASR 1000_Series Aggregation Services Routers Software Configuration Guide*.

Check the Running Configuration Settings

To check the value of the settings you have entered, enter the **show running-config** command at the `Router#` prompt:

```
Router# show running-config
```

To review changes you make to the configuration, use the EXEC mode **show startup-config** command to see the changes and copy run-start stored in NVRAM.

Save the Running Configuration to NVRAM

To store the configuration or changes to your startup configuration in NVRAM, use the **copy running-config startup-config** command to save your configuration changes to the startup configuration so that the changes will not be lost if the software reloads or a power outage occurs. For example:

```
Router# copy running-config startup-config
Building configuration...
```

It might take a minute or two to save the configuration. After the configuration has been saved, the following output appears:

```
[OK]
```

```
Router#
```

On most platforms, this task saves the configuration to NVRAM. On the Class A Flash file system platforms, this task saves the configuration to the location specified by the `CONFIG_FILE` environment variable. The `CONFIG_FILE` variable defaults to NVRAM.

To review changes you make to the configuration, use the EXEC mode **show startup-config** command to see the changes and copy run-start stored in NVRAM.



Note Using this command saves the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

Perform Other Configuration Tasks

To make advanced configuration changes after you establish the basic startup configuration for your router, refer to the *Cisco ASR 1000 Series Aggregation Services Routers Software Configuration Guide* and modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware. These publications contain additional information on using the **configure** command, such as information about the following tasks:

- Understanding Diagnostic Mode feature
- Understanding Command Modes
- Booting and rebooting the router
- Understanding software packages for the Cisco ASR 1000 Series Aggregation Services Routers
- Software Upgrades

7 After Installation

Follow the instructions in this section to replace components after installation. The following topics are covered in this section:

- [Power Off the Cisco ASR 1004 Router, page 30](#)
- [Remove and Replace a Power Supply, page 30](#)
- [Remove the Shared Port Adapter, page 35](#)



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Statement 1030

Power Off the Cisco ASR 1004 Router

This section explains how to shut down the Cisco ASR 1000 Series router. It is recommended that before turning off all power to the chassis, you issue the **reload** command. This insures that the operating system cleans up all the file systems. Once the reload operation is complete, then the Cisco ASR 1004 Router can be powered off safely.

To remove power from the Cisco ASR 1000 Series Router, follow this procedure:

Step 1 Slip on the ESD-preventative wrist strap that was included in the accessory kit.

Step 2 Before you shutdown power to the router, issue the IOS **reload** command to halt the system and then wait for ROM Monitor to execute before proceeding to the next step. The following screen shot shows an example of the reload command:

```
Router#reload
Proceed with reload? [confirm]

*Jun 18 19:38:21.870: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload command.
```

Step 3 Remove any power cables from the Cisco ASR 1004 Router.



Note

After powering off the router, wait a minimum of 30 seconds before powering it on again.

Remove and Replace a Power Supply

This section provides instructions for removing and replacing the AC power supply and the DC power supply in a Cisco ASR 1004 Router. Before you begin, make certain the chassis is grounded.

Remove and Then Replace an AC Power Supply

To remove a live Cisco ASR 1004 Router AC power supply that is not operating normally (and then replace the AC power supply within five minutes), follow this procedure:

Step 1 Slip on the ESD-preventative wrist strap that was included in the accessory kit.

Step 2 Before you turn off a power supply, make certain the chassis is grounded.

Step 3 Turn the power supply Standby switch to the Standby position of the power supply.

Step 4 Unplug the power cable from the AC inlet on the back of the power supply and the power source.

Step 5 Unscrew the power supply captive screws.



Note Two power supplies must be installed in the chassis at all times to ensure sufficient cooling. The system fans are inside the power supply units and must spin for cooling. Because all the system fans can be powered by one power supply, the second power supply unit does not have to be powered on, but it must be installed.



Caution If you remove a power supply, the system can run for a maximum of five minutes before the system shuts down. The fans and power elements are independent within the power supply. Therefore, it is not required that the replacement power supply be energized within five minutes. The only requirement is that the power supply be installed in the chassis, which energizes the fans and maintains proper system cooling.

Step 6 Grasping the power supply handles, pull the power supply from the chassis.

Step 7 Replace the AC power supply within five minutes or the system will shutdown.

You have removed an AC power supply from the Cisco ASR 1004 Router and now must replace the AC power supply within five minutes. Follow these steps:

Step 1 Insert another AC power supply in power supply Slot 0 or power supply Slot 1 until it is full seated.

Step 2 Tighten the captive screws. Insert the AC power cable.

Step 3 Plug the power supply cable into the power source.

Step 4 Place the power supply Standby switch in the On (I) position.

Step 5 The power supply LEDs light when power is supplied to the router.

You have completed a live change-out procedure (that is, removing and replacing an AC power supply) for an AC power supply not operating properly in the Cisco ASR 1004 Router within five minutes

Remove and Then Replace a DC Power Supply

Because of the power supply redundancy, there is no need to power off the Cisco ASR 1004 Router before removing one of the DC power supplies.



Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit.** Statement 1003



Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030



Warning **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Step 1 Before servicing the power supply, switch the circuit breaker Off in your equipment area.

Step 2 Slip on the ESD-preventative wrist strap that was included in the accessory kit.

Step 3 Switch the power supply circuit breaker switch to Off (O).

Step 4 Locate the terminal block on the rear of the chassis on the power supply.

Step 5 Remove the terminal block plastic cover and then follow these steps:

- a. Unscrew the negative cable Kepnut screw, washer, and ground lug, and remove the stud and lead wire.

- b. Unscrew the positive cable Kepnut screw, washer, and ground lug, and remove the stud and lead wire.
- c. Unscrew the earth ground Kepnut screw, washer, and ground lug and remove the stud and lead ground wire.

Step 6 Loosen the captive screws on the DC power supply.



Note

Two power supplies must be installed in the chassis at all times to ensure sufficient cooling. The system fans are inside the power supply units and must spin for cooling. Because all the system fans can be powered by one power supply, the second power supply unit does not have to be powered on, but it must be installed.



Caution

If you remove a power supply, the system can run for a maximum of five minutes before the system shuts down. The fans and power elements are independent within the power supply. Therefore, it is not required that the replacement power supply be energized within five minutes. The only requirement is that the power supply be installed in the chassis, which energizes the fans and maintains proper system cooling.

Step 7 Grasping the power supply handles, pull the power supply from the chassis. When you remove the DC power supply, you will see similar messages in the log report as shown in the section, [Remove and Then Replace an AC Power Supply](#), page 30.

Step 8 Replace the DC power supply within five minutes or the system will shutdown.

You have removed a DC power supply from the Cisco ASR 1004 Router and now must replace the DC power supply within five minutes.

This section provides instructions for installing the DC power supply.



Caution

Before you connect DC-input power, you must install the DC power ground leads to the DC power supply.



Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

Step 1 Locate the terminal block and remove the plastic cover.

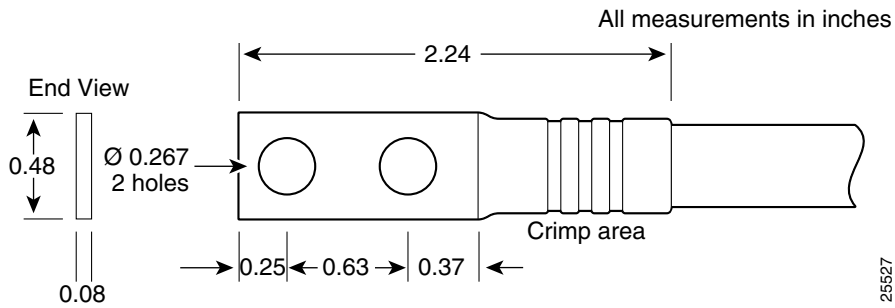
Step 2 Unscrew and remove the two screws.

Step 3 Slide the plastic cover off of the terminal block.

Step 4 On the DC power supply terminal block, locate the GND connection which must be connected first and follow these steps:

- a. Using the two-hole grounding lug, replace the washers and Kepnut screw in the following order.
 - Flat washer
 - Grounding cable lug
 - Kepnut screw
- b. Tighten the Kepnut screws (use the screwdriver to tighten the ground screw in the terminal block to a torque of 8 in-lbs/ 2 per.) on the power supply studs.

Figure 13 Cisco ASR 1004 Router DC Power Supply Grounding Wire and Stud



Step 5 Attach the other end of the ground cable to the site ground connection.

Caution

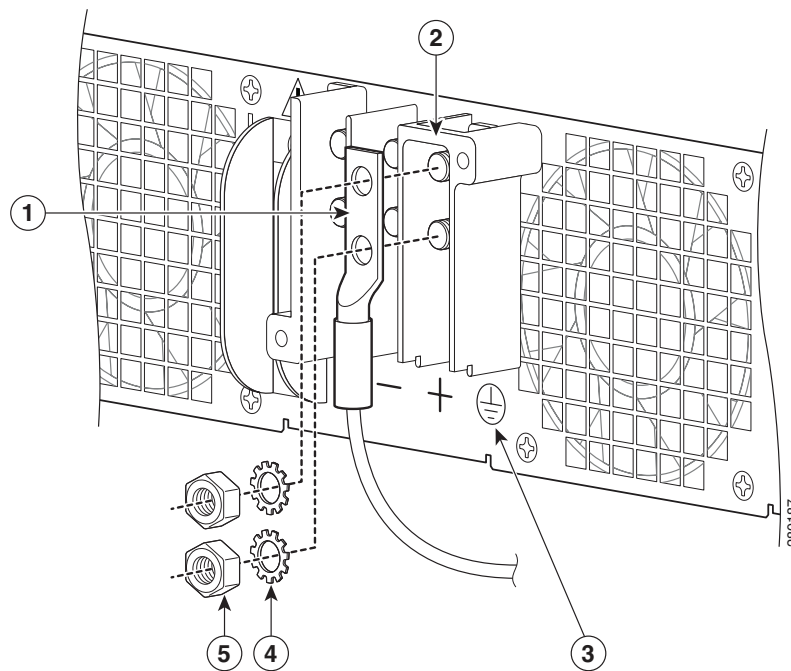
Before you continue to install the terminal block ground wires, stop and perform Step 6. To prevent any contact with metal lead on the ground wire and the plastic cover.

Step 6 You must wrap the positive and negative cables with sleeving. Take each wire and cover the area from the lug to the wire with heavy shrink sleeving.

Step 7 Replace the ground lug with cable in the following order:

- a. Flat Washer
- b. Ground lug with the positive and negative wire
- c. Kepnut screw

Figure 14 Cisco ASR 1004 Router DC Power Supply Terminal Block



1	Ground lug and positive lead wire	4	Washer
2	Terminal block and positive stud	5	Kepnut screw
3	Earth grounding symbol		

Step 8 Tighten the Kepnut screw (use the screwdriver to tighten the ground screw in the terminal block to a torque of 8 in-lbs / 4 per.) and repeat the same steps for the positive ground stud and wire.

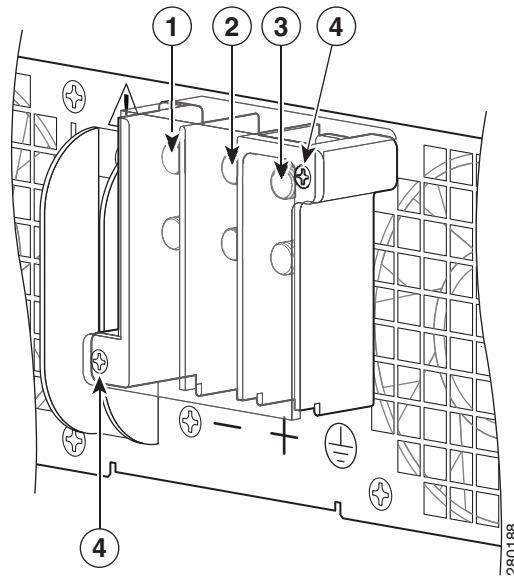


Note Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact.

Step 9 Use tie wraps to secure the wires, so that the wires are not pulled from the terminal block by casual contact. Tie-wrap studs are located below the power supply terminal block.

Step 10 Replace the terminal block plastic cover, which slides over the terminal block; then tighten the screws (tighten the screw to a torque of 5 in-lbs / 1 per.).

Figure 15 Cisco ASR 1004 Router DC Power Supply Terminal Block



1	Terminal block and negative stud	3	Earth ground stud
2	Terminal block and positive stud	4	Plastic cover screws

Step 11 Remove the tape from the circuit-breaker switch handle and move the circuit-breaker handle to the on position, if you taped the circuit breaker.

Step 12 Switch the On/Off circuit breaker switch to the On (I) position.

This completes the procedure of removing a DC power supply from the Cisco ASR 1004 Router.

Install and Remove the SPA Interface Processor (SIP)

This section provides instructions for installing and removing the SIP from the Cisco ASR 1004 Router.

Step 1 Before you begin, make certain the chassis is grounded.

Step 2 Attach an ESD wrist strap between you and an unpainted chassis surface.

Step 3 To insert the SIP, carefully align the edges of the SIP between the upper and lower edges of the module slot.

Step 4 Carefully slide the SIP into the module slot until the SIP makes contact with the backplane.

Step 5 Tighten the locking thumbscrews on both sides of the SIP. See

- Step 6** To remove the SIP, first disconnect all cables from each SPA.
- Step 7** Loosen the locking thumbscrews on both sides of the SIP.
- Step 8** Slide the SIP out of the module slot. If you are removing a blank filler plate, pull the blank filler plate completely out of the module slot.

Remove the Shared Port Adapter

The shared port adapter ships installed. These instructions are provided for future use. Cabling information is included with the specific shared port adapter documentation.

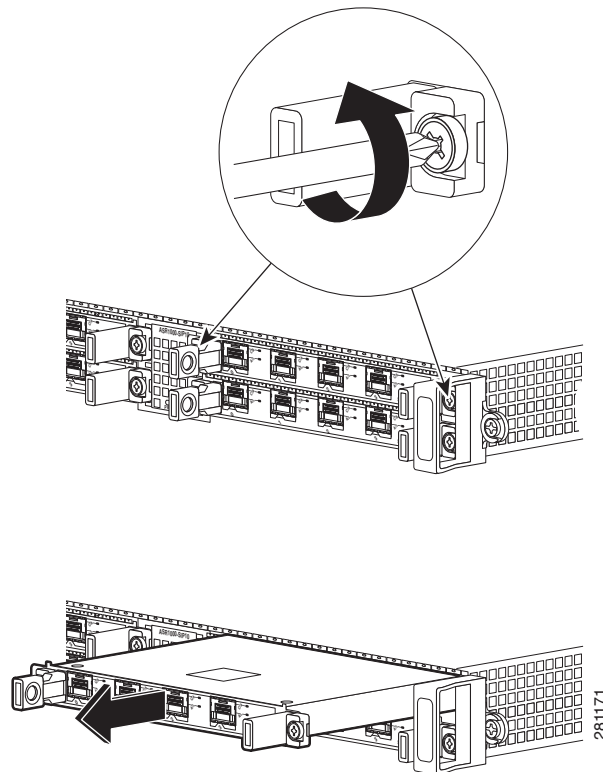
- Step 1** Attach an ESD wrist strap between you and an unpainted chassis surface.
- Step 2** Disconnect all cables from the shared port adapter.
- Step 3** Before removing any shared port adapter, shut down the interface so that there is no traffic running through the shared port adapter when it is removed.



Note Removing a shared port adapter while traffic is flowing through the ports can cause system disruption.

- Step 4** Remove the shared port adapter from the chassis slot. Grasp the handle and pull the shared port adapter or blank shared port adapter from the router.

Figure 16 *Installing and Removing the Shared Port Adapter*



- Step 5** Locate the shared port adapter slot guides inside the Cisco ASR 1004 Router. They are near the top, and are recessed about one-half inch.

**Caution**

The shared port adapter must slide into the slot guides under the chassis lid. Do not allow the shared port adapter components to come in contact with the system board or the shared port adapter could be damaged.

Step 6 Carefully slide the shared port adapter into the shared port adapter slot and seat it. When installed, the shared port adapter input/output panel should be flush with the face of the router.

Step 7 Reconnect any cables, including the shared port adapter and power cables, and place the cables through any cable-management bracket.

**Note**

If the shared port adapter fails to come up, reseal or reinsert the shared port adapter: do not use excessive force.

Step 8 Power on the router by turning the power switch to the On(I) position.



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